

CIA/OER/S-06833-75 Approved for Release 2003/05/28 : CIA-RDP80-01063A000600010069 FERTILIZER SITUATION IN EASTERN EUROPE
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Fertilizer Situation in Eastern Europe
and the Peoples' Republic of China

Eastern Europe

Production

1. East European production of chemical fertilizer totaled 9.6 million tons (nutrient) in 1974 (Table 1). Output has increased at an average annual rate of about 8.4% since 1965. The most dramatic growth was in production of nitrogen fertilizer, which increased at an average rate of nearly 12%. Output of phosphate fertilizer increased about 8% per year, and that of potassium fertilizer, nearly all of which was produced in East Germany, by only about 5% per year.

2. Several new fertilizer plants started operation in 1974. Bulgaria commissioned the Devnya fertilizer complex, comprised of a 200,000 ton-per-year ammonia plant, a complex fertilizer plant (160,000 tons-per-year P_2O_5), and a triple superphosphate plant (150,000 tons-per-year P_2O_5). Trial operations began at one of East Germany's new urea plants located at Piesteritz. (Two other urea plants at the same location are scheduled for completion in 1975. The three plants will have a combined annual capacity of 480,000 nutrient tons.) The Police chemical combine in Poland began production of complex fertilizers in 1974. This plant has

an annual capacity of 440,000 tons (product weight).

Consumption

3. Consumption of fertilizer in Eastern Europe in 1974 was approximately in balance with production (Table 1). The average annual increase from 1965-1974 was 8.8%. In 1973, consumption of fertilizer (NPK nutrient) in kilograms per hectare of arable land was as follows: GDR, 361; Czechoslovakia, 265; Hungary, 216; Poland, 207; Bulgaria, 159; and Romania, 81.6. Despite steady increases, fertilizer application in Eastern Europe is still far below the level of the EEC. Increased use of fertilizer has accounted for much of the increase in crop production in Poland and Romania in recent years.

Trade

4. Eastern Europe is a net exporter of nitrogen fertilizer and a net importer of phosphate and potassium fertilizer. In 1973, combined exports from Poland, Romania, and Bulgaria totaled about 1 million tons of nitrogen fertilizer (nutrient). Czechoslovakia, East Germany, and Hungary imported a total of about 400,000 tons (nutrient).

5. Available data on intra-bloc trade are poor. However, Bulgaria exports substantial amounts of nitrogen fertilizer, mainly to non-Communist countries. About 40% of

Poland's exports of nitrogen fertilizer go to East Germany. Most of the balance is exported to non-Communist countries. Nearly all of Romania's exports of nitrogen fertilizer go to non-Communist countries and to the Peoples' Republic of China. In 1973, about three-fourths of Czechoslovakia's nitrogen imports and one-fifth of Hungary's were supplied by the USSR. Poland supplied about three-fourths of the nitrogen fertilizer imported by East Germany.

6. Phosphate fertilizers and/or phosphate raw materials are imported by all East European countries from the USSR and non-Communist countries. Romania exports small amounts of phosphate fertilizers. Bulgaria, Hungary, Czechoslovakia and East Germany are helping to build an ammonium phosphate plant in the USSR and will receive finished fertilizer in return.

7. East Germany is the only net exporter of potassium fertilizer among the East European countries. In 1973 it exported about 1.8 million tons of potassium fertilizer (nutrient), of which about 1.1 million tons went to other East European countries.

8. Production and consumption data have consistently indicated an East European surplus of nitrogen fertilizer and a deficit in phosphate and potassium fertilizer. The actual magnitude of the net balance is unknown. The apparent

net balance derived from trade data (Table 2) is more or less compatible with the apparent net balance derived from production and consumption (Table 1) making allowance for the incomplete nature of the trade information. The net balance derived from production and consumption data is, in most cases, larger than the net balance derived from trade data. An unexplained exception is the case of nitrogen fertilizer in Poland in 1971-1974.

Raw Materials

9. Most of the new nitrogen facilities in Eastern Europe are based on natural gas feedstocks. Adequate supplies of natural gas probably will continue to be available from domestic sources or from the USSR. Eastern Europe produced nearly 50 billion cubic meters of natural gas in 1974 (60% in Romania), and output should increase at an average annual rate of about 5% during 1976-80. Soviet shipments of natural gas to Eastern Europe, which totaled nearly 9 billion cubic meters in 1974, will increase to about 12 billion cubic meters in 1975, an amount more than sufficient to support East European plans for increased production of nitrogen fertilizer. Eastern Europe is looking to North African countries for increasing quantities of phosphate rock. Potash resources in the GDR and the USSR should guarantee Eastern Europe adequate supplies of this

product. Moreover, Poland, a major consumer of potassium fertilizers, is planning to exploit potash salt deposits in the region of Puck Bay.

Outlook: 1975

10. Comparison of production and consumption plans (Table 1) indicates that Romania, Poland and Bulgaria should have an exportable surplus of about 1.26 million tons (nutrient) of nitrogen fertilizer in 1975. Export of about 1 million tons to countries outside of Eastern Europe appears possible. Although Romania's 1975 goal for nitrogen fertilizer production is unlikely to be met, the increase in consumption probably can be held to a level where the shortfall in availability for export can be made up, for the most part, by Bulgaria. Bulgaria probably will come close to realizing its planned nitrogen fertilizer output, but its 1975 target for consumption appears unreasonably high. Polish production and consumption of nitrogen fertilizer in 1975 may be about as planned. Substantial increases in production of potash, especially in East Germany, could considerably reduce East European dependence on potassium fertilizer from outside sources. However, as non-Communist countries take nearly 40% of East German potassium fertilizer exports, substantial imports from the USSR will continue to be necessary.

Outlook: 1980

11. In 1980 Eastern Europe is expected to have an even greater exportable surplus of nitrogen fertilizers. Comparison of production and consumption plans for that year indicates that Bulgaria, Czechoslovakia, East Germany, Poland and Romania should have an exportable surplus of about 2 million tons of nitrogen fertilizers (nutrient) and that Hungary should be more or less self-sufficient in such fertilizer (Table 1). Even though East European countries may not get all planned capacity on stream, the exportable surplus of nitrogen fertilizer should be in the neighborhood of 1.5-2 million tons. Phosphate fertilizer requirements will continue to exceed production somewhat and imports of phosphate raw material undoubtedly will increase. East Germany, which has abundant potash resources, probably will continue to increase its exports of potassium fertilizer.

12. Romania plans to build a large fertilizer complex comprised of a 420,000 ton-per-year urea plant and a 208,000 ton-per-year diammonium phosphate plant with a total nutrient equivalent of 225,000 N and 100,000 P₂O₅. Scheduled completion date is 1978 but as yet no contracts are known to have been signed. In Poland, increased phosphate fertilizer production is expected to be effected through expansion and modernization of existing plants. A fourth NPK unit and

a 1,500 ton-per-day ammonia plant are scheduled for 1980 start-up at Police. A 1,200 ton-per-day urea plant is also planned. Bulgaria is planning to add another ammonia and urea complex to either its Varna or Vratsa fertilizer works. The ammonia plant is likely to have a capacity of about 1,000 tons per day while a 1,800 ton-per-day urea plant is envisaged. Recently announced Czechoslovak plans to produce 1.3 million tons of ammonia in 1980 will require the building of additional capacity.

Outlook: After 1980

13. Information on fertilizer plans beyond 1980 is fragmentary. Hungarian projections indicate self-sufficiency in nitrogen fertilizer. Czechoslovakia recently announced plans to produce 1.7 million tons of fertilizer (nutrient) in 1985 and 1.86 million tons in 1990. Ammonia production is to be 1.34 million tons and 1.86 million tons for these years. Projected imports of raw materials in 1985 include 520,000 tons of P_2O_5 and 720,000 tons of K_2O ; in 1990, 500,000 tons of P_2O_5 and 800,000 tons of K_2O . In 1990 Poland plans to produce about 6.5 million tons of fertilizer (nutrient). Projected consumption patterns for 1985 indicate the use of about 1.9 million tons of nitrogen, 1.5 million tons of P_2O_5 and 2.0 million tons of K_2O . After 1980 no further investment is envisaged in phosphate raw material

complexes in Poland. It intends to cooperate with phosphate rock producers in the construction of complexes at the site of the raw material source. Additional P_2O_5 requirements will then be met by imports from these plants either in the form of highly concentrated phosphoric acid or triple superphosphate.

The Peoples' Republic of China

Production

14. The PRC's production of chemical fertilizer failed to increase in 1974, remaining at about 24.8 million tons (standard units).^{*} See Table 3. Compared with consistent annual gains of nearly 20% since the late 1960s, the performance was disappointing. It is unlikely that the PRC will achieve its planned production goal of 35 million tons (standard units) in 1975. Internal difficulties in the mining and shipping of coal (currently China's major feedstock) seriously impeded China's production of nitrogen fertilizer in 1974.

Trade

15. PRC imports of chemical fertilizer fell in 1974 as a result of high prices of chemical fertilizer in world markets and shortages of foreign exchange. The PRC drastically cut imports of phosphate rock from Morocco, following the

quadrupling of Moroccan export prices in 1974 and reduced imports of nitrogen fertilizer from Japan following Japanese price increases. During the 1974/75 fertilizer year, the PRC will import about 1.5 million tons of nitrogen fertilizer from Japan, nearly 40% less than the 2.4 million tons it took from this source in 1973/74.

Outlook: 1980

16. By 1980, thirteen large ammonia/urea complexes now being imported are expected to be operational. They will have a combined annual capacity of 3.2 million tons (nutrient), which should be sufficient to meet domestic needs and to eliminate most of the need to import nitrogen fertilizer. Development of domestic deposits of phosphate rock is under-way to reduce dependence on expensive imported phosphate rock. Increased production of nitrogen and phosphate fertilizers will necessitate a large increase in imports of potassium fertilizer to maintain a proper nutrient balance. China's imports of potassium fertilizer may increase to about 2 million tons (nutrient) by 1980. Natural gas from large domestic deposits will supply the new ammonia/urea plants, and replace coal as China's principal feedstock for production of nitrogen fertilizer during 1975-1980.

* Chinese standard units are defined as follows: nitrogen fertilizers contain 20% N; phosphate fertilizers, 18.7%, P_2O_5 ; and potash fertilizers 40%, K_2O .

Table 1

Eastern Europe: Production, Consumption and Net Balance in
Chemical Fertilizer -- 1969-75, 1980

Country	Year	Production			Consumption			Net Balance ^{1/}			Approved Total
		Nitrogen	Phosphate	Potassium	Total	Nitrogen	Phosphate	Potassium	Total		
Bulgaria	1969	541	140		681	387	280	26	693	+154	-26
	1970	602	148		750	379	235	25	639	+223	-25
	1971	562	146		708	322	266	48	636	+240	-48
	1972	523	129		652	354	230	62	646	+169	-62
	1973	516	135		651	328	259	46	633	+188	-46
	1974	593 ^{2/}	188		781	294 ^{1/}	232 ^{1/}	41 ^{1/}	567	+299	-41
	1975	687 ^{2/}	324 ^{1/}		1,011	518 ^{1/}	409 ^{1/}	73 ^{1/}	1,000 ^{1/}	+169	-73
	1980	500 ^{2/}	500 ^{2/}	35 ^{2/}	1,385	707 ^{1/}	558 ^{1/}	99 ^{1/}	1,364 ^{1/}	+143	-64
Czechoslovakia	1969	299	289		588	400	312	475	1,187	-101	-475
	1970	296	322		618	419	349	514	1,282	-123	-452
	1971	317	331		648	435	365	571	1,371	-118	-495
	1972	344	334		678	469	363	585	1,417	-125	-503
	1973	351	337		688	486 ^{1/}	377 ^{1/}	606 ^{1/}	1,469	-135	-523
	1974	385	336		721	463 ^{1/}	359 ^{1/}	577 ^{1/}	1,399	-78	-494
	1975	496 ^{1/}	366 ^{1/}		862	570 ^{1/}	400 ^{1/}	590 ^{1/}	1,560	-74	-438
	1980	800 ^{1/}	437 ^{1/}	163 ^{1/}	1,400	600 ^{1/}	480 ^{1/}	690 ^{1/}	1,770	+200	-527
East Germany	1969	439	395		834	488	389	624	1,501	-49	+1,722
	1970	395	430		825	511	410	614	1,535	-116	+1,805
	1971	388	386		774	577	414	639	1,630	-189	+1,806
	1972	428	430		858	658	409	529	1,596	-230	+1,929
	1973	411	431		842	666	403	658	1,727	-255	+1,898
	1974	460	410		870	693 ^{1/}	453	716	1,862	-233	+2,149
	1975	543 ^{1/}	430 ^{1/}		973	720 ^{1/}	500 ^{1/}	710 ^{1/}	1,930	-177	+2,470
	1980	889 ^{1/}	484 ^{1/}	3,300 ^{1/}	4,673	775 ^{1/}	538 ^{1/}	764 ^{1/}	2,077	+114	+2,536
Hungary	1969	309	170		479	348	182	169	699	-48	-169
	1970	350	167		517	391	217	229	837	-41	-229
	1971	377	174		551	394	251	309	954	-17	-309
	1972	374	181		555	422	266	329	1,017	-48	-329
	1973	404	190		594	481	324	384	1,189	-77	-384
	1974	391	204		595	523	396	431	1,350	-132	-431
	1975	469 ^{1/}	231 ^{1/}		700	578 ^{1/}	407 ^{1/}	465 ^{1/}	1,450	-109	-465
	1980	750 ^{1/}	505 ^{1/}	80 ^{1/}	1,335	765 ^{1/}	550 ^{1/}	630 ^{1/}	1,945	-15	-550
Poland	1969	938	534		1,472	785	595	1,036	2,416	+153	-1,036
	1970	1,030	599		1,629	822	635	1,114	2,571	+208	-36
	1971	1,081	706		1,787	907	718	1,262	2,887	+174	-1,114
	1972	1,147	763		1,910	979	782	1,286	3,047	+168	-1,262
	1973	1,365	814		2,179	1,070	854	1,405	3,329	+295	-1,286
	1974	1,458	824		2,282	1,150	850	1,550	3,550	+308	-1,405
	1975	1,535 ^{1/}	927 ^{1/}	79 ^{1/}	2,541	1,207 ^{1/}	892 ^{1/}	1,626 ^{1/}	3,725	+35	-1,550
	1980	2,240 ^{1/}	1,300 ^{1/}	105 ^{1/}	3,645	1,700 ^{1/}	1,300 ^{1/}	1,800 ^{1/}	4,800	+540	-1,547

Table 1
Eastern Europe: Production, Consumption and Net Balance in
Chemical Fertilizer -- 1969-75, 1980

Country	Year	Production			Consumption			Net Balance		
		Nitrogen	Phosphate	Potassium	Nitrogen	Phosphate	Potassium	Nitrogen	Phosphate	Potassium
Romania	1969	494	221	5	350	208	28	+144	+13	-23
	1970	647	235	4	438	247	28	+209	-9	-24
	1971	827	245	10	486	204	32	+341	+41	-22
	1972	874	313	13	436	272	49	+438	+41	-36
	1973	854	361	27	442	350	62	+412	+11	-35
	1974	970 ^{2/}	410 ^{2/}	31 ^{2/}	476 ^{2/}	377 ^{2/}	67 ^{2/}	+494	+33	-36
	1975	1,435 ^{2/}	480 ^{2/}	47 ^{2/}	672 ^{2/}	428 ^{2/}	77 ^{2/}	+763	+52	-30
	1980	2,475 ^{2/}	930 ^{2/}	167 ^{2/}	1,450 ^{2/}	860 ^{2/}	320 ^{2/}	+1,025	+70	-153
TOTAL										
Eastern Europe	1969	3,011	1,749	2,351	2,758	1,966	2,358	+253	-217	-7
	1970	3,320	1,901	2,485	2,960	2,090	2,524	+360	-189	-30
	1971	3,552	1,988	2,531	3,121	2,218	2,861	+431	-230	-331
	1972	3,690	2,150	2,553	3,318	2,322	2,840	+372	-172	-287
	1973	3,901	2,268	2,666	3,473	2,567	3,161	+428	-299	-495
	1974	4,257	2,372	2,979	3,599	2,667	3,382	+658	-295	-403
	1975	5,165	2,758	3,458	4,265	3,036	3,541	+900	-278	-83
	1980	8,004	4,156	3,850	5,997	4,286	4,303	+2,007	-130	-453

1/ + indicates surplus available for export or addition to stocks.

2/ - indicates a deficit.

3/ Estimate.

4/ Allocation by type of fertilizer derived from total on basis of 1973 consumption patterns.

5/ Plan.

6/ Allocation by type of fertilizer derived from total on basis of 1972 consumption patterns.

7/ Allocation by type of fertilizer derived from total on basis of planned 1975 consumption patterns.

8/ Residual.

Table 2
Eastern Europe: Trade in Chemical Fertilizers -- 1969-74

Country	Year	Exports			Imports			(Thousand metric tons, nutrient basis)		
		Nitrogen	Phosphate	Potassium	Total	Nitrogen	Phosphate	Potassium	Total	Balance
Bulgaria	1969	127			127	1/				
	1970	199			199	100	25		125	
	1971	232			232	128	47		175	
	1972	145			145	114	68		182	
	1973	148			148	119	42		161	
Czechoslovakia	1969	209 1/2			209 1/2	1/				
	1970					1/				
	1971	5			5	24			24	
	1972	6			6	15			15	
	1973	23			23	33			33	
East Germany	1969					86				
	1970					97				
	1971					79				
	1972					70				
	1973					75				
Hungary	1969					124				
	1970					150				
	1971					194				
	1972					238				
	1973					237				
Poland	1969					105				
	1970					83				
	1971					52				
	1972					75				
	1973					94				
Romania	1969					124				
	1970					150				
	1971					194				
	1972					238				
	1973					237				
Soviet Union	1969					105				
	1970					83				
	1971					52				
	1972					75				
	1973					94				
Yugoslavia	1969					124				
	1970					150				
	1971					194				
	1972					238				
	1973					237				

1/ Data not available.
2/ Estimate.

Table 2
Eastern Europe: Trade in Chemical Fertilizers -- 1969-74

Country	Year	Exports			Imports			Apparent Net Balance		
		Nitrogen	Phosphate	Potassium	Nitrogen	Phosphate	Potassium	Nitrogen	Phosphate	Potassium
Romania	1969	158	1/					+158		- 34
	1970	139	3					+139	+3	- 30
	1971	251	2					+251	+2	- 34
	1972	335	3					+336	+3	- 59
	1973	414	Negl.					+414	Negl.	- 60
TOTAL										
Eastern Europe	1969	426	1/		315	✓		+111	- 86	6
	1970	535	3	1,656	340	227	1,967	+195	-224	-228
	1971	857	2	1,739	325	227	2,137	+532	-225	-357
	1972	886	3	1,757	418	265	2,237	+468	-262	-380
	1973	1,035	Negl.	1,820	416	323	2,367	+619	-323	-417
TOTAL				1,819						
				2,082	315	✓	2,063			
				2,277	340		2,534			
				2,616	325		2,689			
				2,709	418		2,920			
				2,854	416		3,106			

Table 3

People's Republic of China: Production, Consumption and Net Balance in Chemical Fertilizer -- 1973, 1974, 1980

Year	Production			Consumption			(Thousand metric tons)		
	Nitrogen	Phosphate	Potassium	Total	Nitrogen	Phosphate	Potassium	Total	
Nutrient Basis									
1973	2,875	1,865	167	4,907	4,235	1,948	242	6,425	
1974	3,162	1,611	180	4,953	4,162	1,651	370	6,183	
1980	8,500	3,900	600	13,000	8,500	3,900	2,600	15,000	
Standard Units ^{1/}									
1973	14,375	9,973	418	24,766	21,175	10,417	605	32,197	
1974	15,810	8,615	450	24,875	20,810	8,829	925	30,564	
1980	42,500	20,856	1,500	64,856	42,500	20,856	6,500	69,856	

^{1/} Chinese standard units are defined as follows: nitrogen fertilizers contain 20% N; phosphate fertilizers, 18% P₂O₅; and potash fertilizers 40% K₂O.

Table 4

People's Republic of China: Trade in Chemical Fertilizers - 1973, 1974, 1980

Year	Exports			Imports			(Thousand metric tons, nutrient basis)		
	Nitrogen	Phosphate	Potassium	Total	Nitrogen	Phosphate	Potassium	Total	
1973					1,360	83	75	1,518	
1974					1,000	40	190	1,230	
1980					0	0	2,000	2,000	